SUMMARY

[0005a] In one aspect, there is provided a polypeptide comprising the amino acid sequence of SEQ ID NO: 20 with an N-terminal truncation of 50 or more amino acids and a C-terminal truncation of 50 or more amino acids, wherein the polypeptide comprises an amino acid sequence having at least 90% sequence identity to the amino acid sequence of SEQ ID NO: 19.

[0005b] In one aspect, there is provided a composition comprising from 0.001% to 30% w/w of the polypeptide as described herein.

[0005c] In one aspect, there is provided a method of providing a cosmetic benefit to the skin of a subject, the method comprising: applying the composition as described herein to the skin of the subject, thereby providing the cosmetic benefit to the skin of the subject.

[0005d] In one aspect, there is provided a polynucleotide comprising a nucleic acid sequence encoding a polypeptide as described herein.

[0005e] In one aspect, there is provided a recombinant cell comprising at least one copy of a heterologous nucleic acid sequence encoding the polypeptide as described herein.

[0006] In one example, a non-naturally occurring polypeptide is provided consisting of an amino acid sequence having at least 80% sequence identity to an amino acid sequence selected from the group consisting of: SEQ ID NO: 5, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 10, SEQ ID NO: 13, SEQ ID NO: 15, SEQ ID NO: 17, and SEQ ID NO: 19, or a truncate thereof (e.g., a polypeptide having at least 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, or 150 amino acids); and optionally, one or more selected from the group consisting of: a secretion tag, a histidine tag, a fluorescent protein, and a protease cleavage site. In some cases, the non-naturally occurring polypeptide consists of an amino acid sequence having at least 85% sequence identity to an amino acid sequence selected from the group consisting of: SEQ ID NO: 5, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 10, SEQ ID NO: 13, SEQ ID NO: 15, SEQ ID NO: 17, and SEQ ID NO: 19, or a truncate thereof (e.g., a polypeptide having at least 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, or 150 amino acids); and optionally, one or more selected from the group consisting of: a secretion tag, a histidine tag, a fluorescent protein, and a protease cleavage site. In some cases, the non-naturally occurring polypeptide consists of an amino acid sequence having at least 90% sequence identity to an amino acid sequence selected from the group consisting of: SEQ ID NO: 5, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 10, SEQ ID NO: 13, SEQ ID NO: 15, SEQ ID NO: 17, and SEQ ID NO: 19, or a truncate thereof (e.g., a polypeptide having at least 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, or 150 amino acids); and optionally,

CLAIMS

WHAT IS CLAIMED IS:

1. A polypeptide comprising the amino acid sequence of SEQ ID NO: 20 with an N-terminal truncation of 50 or more amino acids and a C-terminal truncation of 50 or more amino acids, wherein the polypeptide comprises an amino acid sequence having at least 90% sequence identity to the amino acid sequence of SEQ ID NO: 19.

2. The polypeptide of claim 1, wherein the polypeptide comprises an amino acid sequence having at least 95% sequence identity to SEQ ID NO: 19.

3. The polypeptide of claim 1, wherein the polypeptide comprises the amino acid sequence of SEQ ID NO: 19.

4. The polypeptide of claim 1, wherein the polypeptide consists of the amino acid sequence of SEQ ID NO: 19.

5. A composition comprising from 0.001% to 30% w/w of the polypeptide of any one of claims 1-4.

6. The composition of claim 5, wherein the composition exhibits one or more properties selected from the group consisting of: stimulates growth of fibroblast cells, increases viability of fibroblast cells or keratinocyte cells, stimulates synthesis of tropoelastin, stimulates synthesis of procollagen, stimulates expression of one or more anti-oxidant gene, reduces expression of one or more pro-apoptotic gene, decreases production of one or more inflammatory cytokines, decreases formation of thymine-thymine (TT) dimer, and any combination thereof.

7. The composition of claim 5 or 6, wherein the composition is formulated for topical application.

8. The composition of claim 7, wherein the composition comprises a topical carrier, a preservative, or both.

9. The composition of claim 8, wherein the topical carrier is selected from the group consisting of: water, oil glycereth-8 esters, glycerin, coconut alkanes, hydroxyethyl acrylate/sodium acryloyldimethyl taurate copolymer, pentylene glycol, disodium ethylenediaminetetraacetic acid (EDTA), caprylyl glycol, chlorphenesin, phenoxyethanol, liposome, biodegradable microcapsule, lotion, spray, aerosol, dusting powder, biodegradable polymer, mineral oil, triglyceride oil, silicone oil, glycerin, glycerin monostearate, alcohols, emulsifying agents, liquid petroleum, white petrolatum, propylene glycol, polyoxyethylene, polyoxypropylene, wax, sorbitan monostearate, polysorbate, cetyl

ester wax, cetearyl alcohol, 2-octyldodecanol, benzyl alcohol, cyclomethicone, cyclopentasiloxane, and any combination thereof.

10. The composition of claim 8 or 9, wherein the preservative is selected from the group consisting of: tocopherol, diiodomethyl-p-tolylsulfone, 2-bromo-2-nitropropane-1,3-diol, cis isomer 1-(3-chloroallyl)-3,5,7-triaza-1-azoniaadamantane chloride, glutaraldehyde, 4,4- dimethyl oxazolidine, 7-ethylbicyclooxazolidine, methyl paraben, sorbic acid, rosemary extract, EDTA, and any combination thereof.

11. The composition of any one of claims 5-10, wherein the composition is a cosmetic.

12. The composition of any one of claims 5-11, wherein the composition is formulated for a personal care product for application to skin.

13. The composition of claim 12, wherein the personal care product is selected from the group consisting of: a mask, a skin cleaner, a soap, a cleansing cream, a cleansing lotion, a facial cleanser, a cleansing milk, a cleansing pad, a facial wash, a facial cream, a body cream, a moisturizer, a facial serum, a facial mask, a body mask, a facial toner, a facial mist, an eye cream, an eye treatment, and an exfoliator formula.

14. The composition of any one of claims 5-11, wherein the composition is formulated for a personal care product for application to hair.

15. The composition of claim 14, wherein the personal care product is selected from the group consisting of: a hair shampoo, a hair conditioner, a hair serum, a scalp serum, a hair mist, and a hair spray.

16. The composition of any one of claims 5-15, wherein the composition comprises from 0.001% to 5% w/w of the polypeptide.

17. A method of providing a cosmetic benefit to the skin of a subject, the method comprising: applying the composition of any one of claims 5-13 or 16 to the skin of the subject, thereby providing the cosmetic benefit to the skin of the subject.

18. The method of claim 17, wherein the cosmetic benefit is an improvement in appearance of the skin of the subject, protection of the skin of the subject, or both.

19. The method of claim 18, wherein the improvement in appearance of the skin of the subject is selected from the group consisting of: an increase in firmness of the skin, an increase in elasticity of

the skin, an increase in hydration of the skin, an increase in tactile texture of the skin, an increase in visual texture of the skin, and any combination thereof.

20. The method of claim 18 or 19, wherein the protection of the skin of the subject is selected from the group consisting of: a decrease in skin damage, a promotion of repair of damaged skin, protection of the skin against ultraviolet (UV) damage, an increase in viability of skin cells, protection of skin cells from effects of urban dust exposure, and any combination thereof.

21. A polynucleotide comprising a nucleic acid sequence encoding a polypeptide of any one of claims 1-4.

22. The polynucleotide of claim 21, wherein the polynucleotide is contained within a vector.

23. The polynucleotide of claim 21 or 22, wherein the polynucleotide further comprises a nucleic acid sequence encoding one or more of a secretion tag, a histidine tag, and a protease cleavage site.

24. The polynucleotide of any one of claims 21-23, wherein the nucleic acid sequence encoding the polypeptide is codon-optimized for expression in a host cell.

25. A recombinant cell comprising at least one copy of a heterologous nucleic acid sequence encoding the polypeptide of any one of claims 1-4.

26. The recombinant cell of claim 25, wherein the recombinant cell is a microbial cell.

27. The recombinant cell of claim 26, wherein the microbial cell is a bacterial cell.